The California Experience:
Restoration and Management for Sustainability

Sustainable Water Resources Roundtable

Sonoma County Water Agency

Westside Water Education Center

Healdsburg, California

May 3-4, 2018

Sustainable Water Resources Roundtable

A national collaboration of federal, state, local, corporate, non-profit and academic interests

A subgroup of the US Advisory Committee on Water Information

Our Mission

To promote sustainability of the nation's resources through …

- Engagement of people & partner organizations
- Targeting of research
- Evaluation of information
- Development & use of indicators

Our Vision

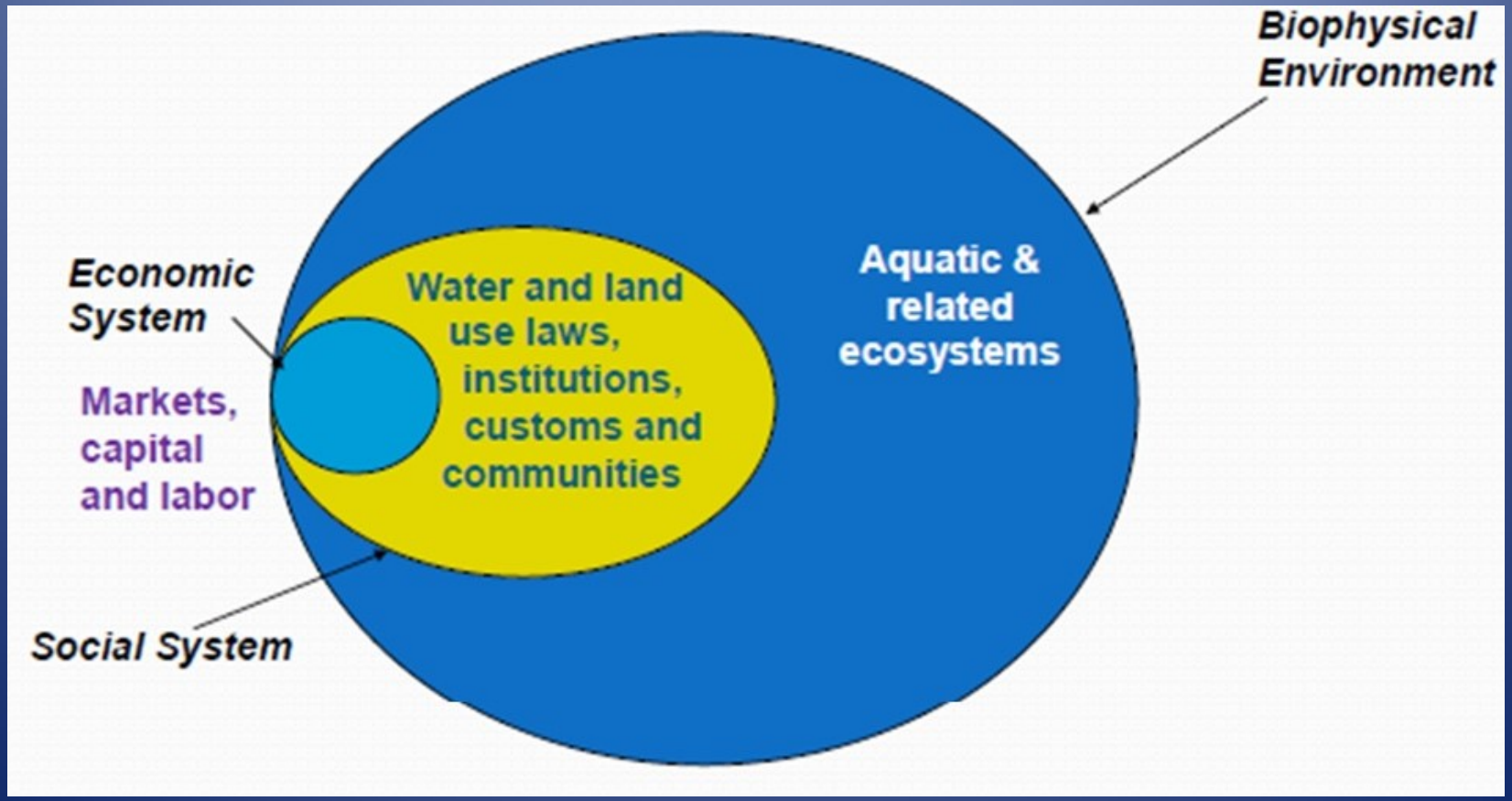
A future in which our nation's water resources support the integrity of economic, social and ecological systems and enhance the capacity of these systems to benefit people and nature.

Collaboration & Outreach

- Over 1,000 participants from federal, state, tribes and local governments; corporations; nonprofits and academia
- Meetings in California; Colorado; Florida; Maryland; Michigan; Minnesota; New Hampshire; Louisiana; Virginia; Washington, D.C.

Web site: http://acwi.gov/swrr

Essential Relationships of Sustainability with Water Use



Capital and System Capacities

Capital is the capacity to produce value over time

Environmental, social and economic systems produce value through flows of services, experiences, or goods that meet human and ecosystem needs over time

We achieve sustainability by maintaining capital to meet needs

The SWRR Indicator Framework

- **Water availability**
- **Water quality**
- **Human uses and health**
- **Environmental health**
- **Infrastructure and institutions**

Water Availability

Renewable water

Upper limit of water availability

Water in the environment

Water remaining after human uses

Water use sustainability

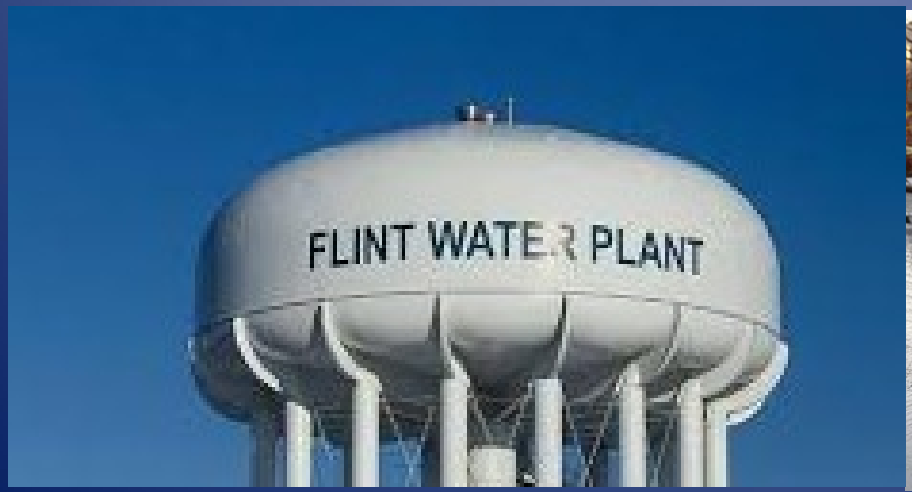
Degree to which water use meets current needs while protecting ecosystems and the interests of future generations

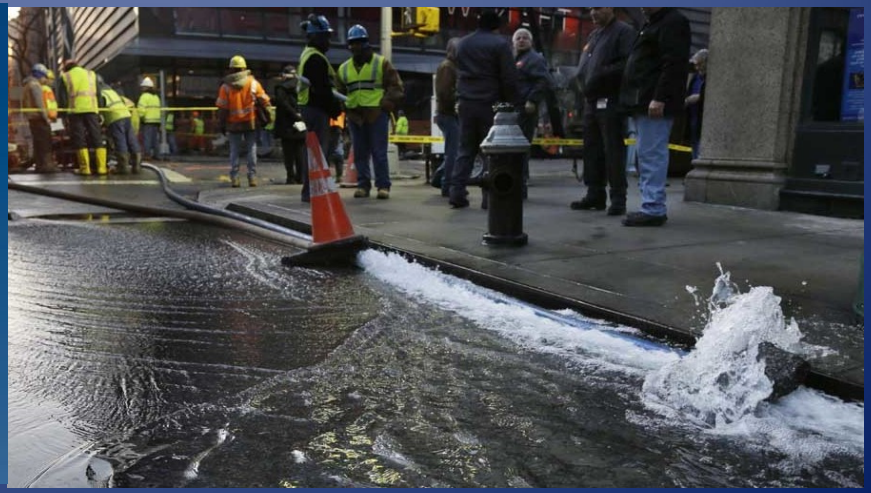
Water Quality

- Quality of water for human uses
  - Drinking, recreation, industry, agriculture, etc.
- Quality of water in the environment
  - Flora and fauna
  - Ecosystem processes
- Water quality sustainability
  - Degree to which water quality satisfies human and ecosystem needs

Infrastructure and Institutions

- Capacity and reliability of infrastructure
  - Capacity and reliability of infrastructure to meet human and ecosystem needs
- Efficacy of institutions
  - Efficacy of legal and institutional frameworks in managing water and related resources sustainably





The Army

Water Security Observations

- Water management largely compliance-driven
- Less attention directed outward to sustainability of regionally shared water sources
- Long-term water projections currently not factored early into stationing decisions
- Chronic funding constraints means attention to Army-owned and Army-operated infrastructure tends to be reactive
- Long-term investment a challenge

Elements of the Army Strategy

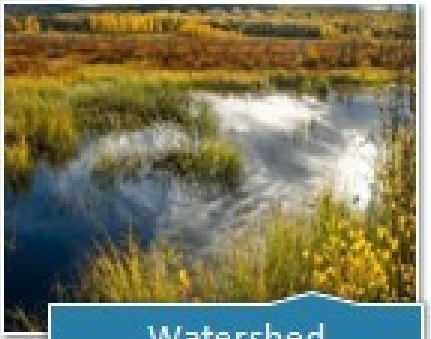
- Assist host nations with water resources sustainability
- Assess the vulnerability of water and wastewater infrastructure to natural mishaps
- Match water quality to water use
- Anticipate long-term water requirements
- Influence long-term water management outside the fence line

Overarching Topics

Suzanne van Drunick

Stressors
Extreme weather events, land use, aging infrastructure, population change

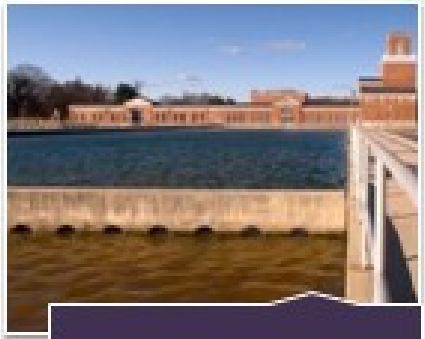
Sustainability
Environmental, Economics, Social



Watershed Sustainability

Nutrients

Green Infrastructure



Water Systems

EPA Watershed Sustainability

- Advancing integrated water resource & watershed management approaches, models, and decision-making tools
- Assess, map & predict the integrity, resilience & restoration potential of the nation's waters
- Science to support new or revised water quality criteria to protect human health & aquatic life

EPA & Nutrients

Detecting & quantifying algal blooms in lakes and estuaries

- Create standard approach to ID algal blooms using satellites
- New methods to quantify algal bloom frequency and extent
- New tool to assist in management of events of risk to the public

NOAA Challenges

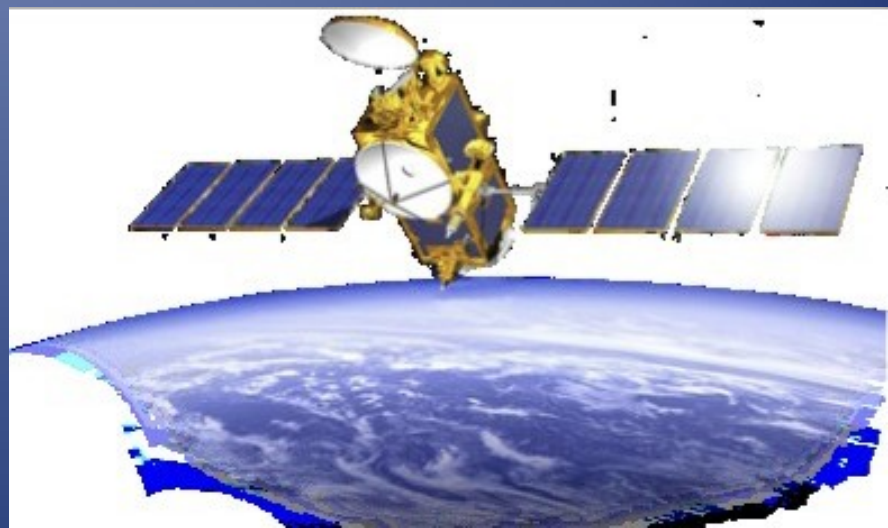
What climate shall we have tomorrow?

Climatic and environmental stakes?

- Increases in global sea and air temperatures
- Widespread melting of snow and ice
- Rising global sea levels

Improving Models

- **Observational & accuracy needs**
  - Global water & energy cycle research
  - Global climate change research
  - Water management, flood prediction & reservoir operation, agriculture & drought assessment
- **Predictions at a finer scale**
- **Accuracy needs for regional problems**
- **Real-time data needs to augment operational networks**



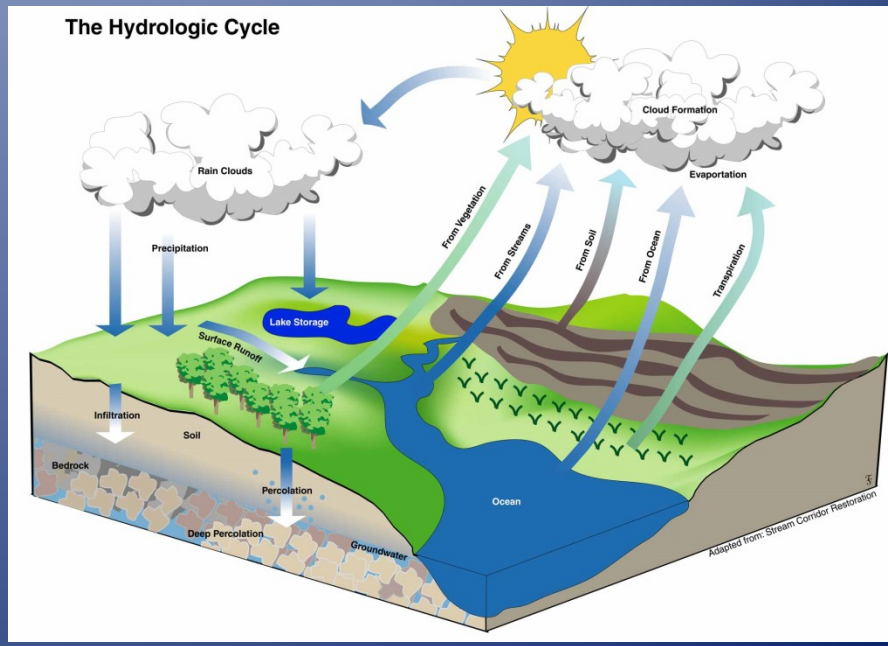
US DOE

The Energy-Water Nexus: Why Now? Why DOE?

- **Energy and water are interdependent**
- **Water scarcity, variability & uncertainty becoming more prominent**
  - Leading to vulnerabilities in the U.S. energy system
- **We cannot assume the future is like the past**
  - Climate, technology, and decision-making
- **Aging infrastructure brings fresh opportunities**
- **Expertise in technology, modeling, analysis & data**
  - Can contribute to understanding issues & pursuing solutions

A Principle of Shared Responsibility

Because water does not respect political boundaries, its management requires shared consideration over time of the needs of people and ecosystems up- and downstream and throughout the hydrologic cycle



Water Sustainability In California

Makes the connection to our values

- Pubic health & safety / Healthy economy
- Ecosystem vitality / Enriching experiences

Understands the importance of indicators

- Provides shared understanding across state government and diverse regions
- Provides a practical way to track long-term progress

Values regions

- Empowers regional water management
- Reflects each region's unique needs

Next Steps for SWRR

- Continue roundtable outreach
  - Build regional connections
  - Add new private, nonprofit & public sector partners

- Assist agencies in developing programs and in describing the need for programs to collect information and manage water sustainably

Contact Information

SWRR Co-Chairs

- Robert Wilkinson, Bren School of Environmental Science and Management, University of California, Santa Barbara, **wilkinson@es.ucsb.edu**
- John Wells, 651-686-8615, John R. Wells and Associates, **jrwells2411@gmail.com**

SWRR Director

- David Berry, 703-741-0791, **davidberry@aol.com**
- Sustainable Water Resources Roundtable http://acwi.gov/swrr